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John S. Beulick
Armstrong Teasdale LLP
One Metropolitan Square, Suite 2600
St Louis, MO 63102

EXAMINER	
HANNAHER, CONSTANTINE	
ART UNIT	**PAPER NUMBER**
2884	

DATE MAILED: 11/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/613,061	REN ET AL.	
	Examiner	Art Unit	
	Constantine Hannaher	2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 September 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-11 and 13-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-11 and 13-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1, 3, 9, 4-8, 10, 11, 13, 19, 14-18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Possin *et al.* (US006167110A) in view of Hu *et al.* (US005510622A) and Cusano (US004187427A).

With respect to independent claim 1, Possin *et al.* discloses a radiation detector (Fig. **1**) comprising a first array **22** with a first photon incident surface and a second array **22** with a second photon incident surface. The arrays **22** in the radiation detector of Possin *et al.* have no particular detector alignment. Hu *et al.* shows that an offset of specifically one-half detector pitch (Fig. **3A**, column 3, lines 27-30) between two arrays **18A**, **18B** in a radiation detector is superior to a plurality of arrays with no offset (Fig. **4**, see also column 1 line 55 to column 2, line 9). In view of the reduced detector pitch without smaller detector elements as suggested by Hu *et al.*, it would have been

obvious to one of ordinary skill in the art at the time the invention was made to modify the radiation detector of Possin *et al.* to offset a first array **22** from a second array **22** by one-half the pitch of detectors **23**. The radiation detector of Possin *et al.* further comprises a scintillator (array) **34** extending from the photon incident surface of one array **22** to the photon incident surface of another array **22** but the scintillator **34** does not separate the arrays **22**. Cusano shows (Fig. **1**) that in a radiation detector in which an array of scintillator bodies **10** is disposed such that x rays **50** are incident on the scintillator body **10** substantially perpendicular to the optical axis of the scintillator body (Fig. **6**) it is known to optically couple each scintillator body **10** to at least two sensor elements **18** such that sensor elements **18** are separated by the scintillator bodies **10**. In view of the enhanced capture of the optical output of the scintillator bodies **10** when a detector **18** is provided at each end as specifically described by Cusano (column 4, lines 12-31), which enhanced capture would have been recognized as useful in the radiation detector of Possin *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the radiation detector of Possin *et al.* to optically couple additional sensor elements **23** at the top end of the scintillator **34** fibers as well as at the bottom end such that the scintillator separated the sensor elements. All arrays **22** suggested in the radiation detector of Possin *et al.* would be in the "same" radiation detector.

With respect to dependent claim 3, the scintillator **34** in the radiation detector of Possin *et al.* comprises a plurality of optical fibers (column 6, lines 9-16).

With respect to dependent claim 9, the plurality of optical fibers in the radiation detector of Possin *et al.* are oriented as recited (column 6, lines 16-18).

With respect to dependent claim 4, the scintillator **334** in the radiation detector of Possin *et al.* (Fig. **3**) comprises a sheet of scintillator material (column 7, lines 22-31).

With respect to dependent claim 5, the scintillator (array) in the radiation detector of Possin *et al.* is configured as recited in view of the direction of a plurality of optical photons from scintillator **34** to the photon incident surfaces of multiple arrays **22** and in view of the additional arrays suggested by Cusano.

With respect to dependent claim 6, the arrays **22** in the radiation detector of Possin *et al.* comprise a plurality of sensor elements comprising a plurality of photosensor devices **23** (especially in view of the grouping illustrated in Fig. **7**).

With respect to dependent claim 7, the photosensor devices **23** in the radiation detector of Possin *et al.* are disposed as recited in view of the nearly identical language of column 3, lines 1-5.

With respect to dependent claim 8, the photosensor devices **23** in the radiation detector of Possin *et al.* are disposed as recited in view of the nearly identical language of column 3, lines 5-9.

With respect to independent claim 10, Possin *et al.* discloses a radiation detector (Fig. **1**) comprising a first array **22** with a first photon incident surface, a second array **22** with a second photon incident surface, wherein the two arrays **22** comprise a plurality of sensor elements comprising a plurality of photosensor devices **23** (especially in view of the grouping illustrated in Fig. **7**), and a scintillator (array) **34** extending from the first photon incident surface to the second incident surface (as is apparent from the view since the extent of scintillator **34** encompasses multiple arrays **22**), configured as recited in view of the direction of a plurality of optical photons from scintillator **34** to the photon incident surfaces of multiple arrays **22**, and comprising a fiber optic scintillator (column 6, lines 9-16) having a plurality of optical fibers bundled and disposed as recited (column 6, lines 16-18), but the fiber optic scintillator **34** in the radiation detector **20** of Possin *et al.* is not optically coupled to at least two sensor elements **23** such that sensor elements **23** are disposed at both ends of the plurality of optical fibers but rather that sensor elements **23** are

optically coupled at one end (the bottom end) of any one of the plurality of optical fibers (Fig. **2**). The arrays **22** in the radiation detector of Possin *et al.* have no particular detector alignment. Hu *et al.* shows that an offset of specifically one-half detector pitch (Fig. **3A**, column 3, lines 27-30) between two arrays **18A**, **18B** in a radiation detector is superior to a plurality of arrays with no offset (Fig. **4**, see also column 1 line 55 to column 2, line 9). In view of the reduced detector pitch without smaller detector elements as suggested by Hu *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the radiation detector of Possin *et al.* to offset a first array **22** from a second array **22** by one-half the pitch of detectors **23**. Cusano shows (Fig. **1**) that in a radiation detector in which an array of scintillator bodies **10** is disposed such that x rays **50** are incident on the scintillator body **10** substantially perpendicular to the optical axis of the scintillator body (Fig. **6**) it is known to optically couple each scintillator body **10** to at least two sensor elements **18** such that sensor elements **18** are disposed at both ends of the plurality of scintillator bodies **10**. In view of the enhanced capture of the optical output of the scintillator bodies **10** when a detector **18** is provided at each end as specifically described by Cusano (column 4, lines 12-31), which enhanced capture would have been recognized as useful in the detector of Possin *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the radiation detector of Possin *et al.* to optically couple sensor elements **23** at the top end of the scintillator **34** fibers as well as at the bottom end such that the scintillator separated the sensor elements. All arrays **22** suggested in the radiation detector of Possin *et al.* would be in the "same" radiation detector.

With respect to independent claim 11, Possin *et al.* discloses a method for fabricating radiation detector corresponding to the illustrated detector **20** (Fig. **1**) which would comprise the steps of fabricating a first array **22** with a first photon incident surface and fabricating a second array

22 with a second photon incident surface. The arrays 22 in the radiation detector fabrication method of Possin *et al.* have no particular detector alignment. Hu *et al.* shows that an offset of specifically one-half detector pitch (Fig. 3A, column 3, lines 27-30) between two arrays 18A, 18B in a radiation detector is superior to a plurality of arrays with no offset (Fig. 4, see also column 1 line 55 to column 2, line 9). In view of the reduced detector pitch without smaller detector elements as suggested by Hu *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the radiation detector fabrication method of Possin *et al.* to position a first array 22 offset from a second array 22 by one-half the pitch of detectors 23. The method of Possin *et al.* further comprises positioning a scintillator (array) 34 having an upper surface and a lower surface, and its lower surface is coupled to the photon incident surface of an array 22 while the upper surface of the scintillator 34 is not so coupled. Cusano shows (Fig. 1) that in a radiation detector in which an array of scintillator bodies 10 is disposed such that x rays 50 are incident on the scintillator body 10 substantially perpendicular to the optical axis of the scintillator body (Fig. 6) it is known to optically couple each scintillator body 10 to at least two sensor elements 18 such that sensor elements 18 are disposed at both ends of the plurality of scintillator bodies 10. In view of the enhanced capture of the optical output of the scintillator bodies 10 when a detector 18 is provided at each end as specifically described by Cusano (column 4, lines 12-31), which enhanced capture would have been recognized as useful in the radiation detector of Possin *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Possin *et al.* to position the scintillator 34 such that additional sensor elements 23 were optically coupled at the top end of the scintillator 34 fibers as well as at the bottom end such that the scintillator separated the sensor elements. All arrays 22 suggested in the method for fabricating the radiation detector of Possin *et al.* would be in the "same" radiation detector.

With respect to dependent claim 13, the positioning of the scintillator **34** in the radiation detector fabrication method of Possin *et al.* comprises the step of positioning a plurality of optical fibers (column 6, lines 9-16).

With respect to dependent claim 19, the positioning of the plurality of optical fibers in the radiation detector fabrication method of Possin *et al.* is as recited (column 6, lines 16-18).

With respect to dependent claim 14, the positioning of the scintillator **334** in the radiation detector fabrication method of Possin *et al.* (Fig. **3**) comprises the step of positioning a sheet of scintillator material (column 7, lines 22-31).

With respect to dependent claim 15, the positioning of the scintillator (array) in the radiation detector fabrication method of Possin *et al.* is as recited in view of the direction of a plurality of optical photons from scintillator **34** to the photon incident surfaces of multiple arrays **22** and in view of the additional arrays suggested by Cusano.

With respect to dependent claim 16, the fabrication of the arrays **22** in the radiation detector fabrication method of Possin *et al.* comprises the step of fabricating a plurality of photosensor devices **23**.

With respect to dependent claim 17, the fabrication of the photosensor devices **23** in the radiation detector fabrication method of Possin *et al.* is as recited in view of the nearly identical language of column 3, lines 1-5).

With respect to dependent claim 18, the fabrication of the photosensor devices **23** in the radiation detector fabrication method of Possin *et al.* is as recited in view of the nearly identical language of column 3, lines 5-9).

With respect to independent claim 20, Possin *et al.* discloses a method for fabricating a radiation detector corresponding to the illustrated detector **20** (Fig. **1**) which would comprise the

steps of fabricating a first array **22** with a first photon incident surface including a plurality of sensor elements including a plurality of photosensor devices **23** (especially in view of the grouping illustrated in Fig. **7**), fabricating a second array **22** with a second photon incident surface including a plurality of sensor elements including a plurality of photosensor devices **23** (especially in view of the grouping illustrated in Fig. **7**), and positioning a scintillator (array) **34** between the first photon incident surface and the second incident surface (as is apparent from the view since the extent of scintillator **34** encompasses multiple arrays **22**), configured as recited in view of the direction of a plurality of optical photons from scintillator **34** to the photon incident surfaces of multiple arrays **22**, and including a fiber optic scintillator (column 6, lines 9-16) having a plurality of optical fibers bundled and disposed as recited (column 6, lines 16-18), but the fiber optic scintillator **34** in the radiation detector **20** of Possin *et al.* is not optically coupled to at least two sensor elements **23** such that sensor elements **23** are disposed at both ends of the plurality of optical fibers but rather that sensor elements **23** are optically coupled at one end (the bottom end) of any one of the plurality of optical fibers (Fig. **2**). The arrays **22** in the radiation detector fabrication method of Possin *et al.* have no particular detector alignment. Hu *et al.* shows that an offset of specifically one-half detector pitch (Fig. **3A**, column 3, lines 27-30) between two arrays **18A, 18B** in a radiation detector is superior to a plurality of arrays with no offset (Fig. **4**, see also column 1 line 55 to column 2, line 9). In view of the reduced detector pitch without smaller detector elements as suggested by Hu *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the radiation detector fabrication method of Possin *et al.* to position a first array **22** offset from a second array **22** by one-half the pitch of detectors **23**. Cusano shows (Fig. **1**) that in a method for fabricating a radiation detector in which an array of scintillator bodies **10** is disposed such that x rays **50** are incident on the scintillator body **10** substantially perpendicular to the optical axis of the scintillator

body (Fig. 6) it is known to optically couple each scintillator body **10** to at least two sensor elements **18** such that sensor elements **18** are disposed at both ends of the plurality of scintillator bodies **10**. In view of the enhanced capture of the optical output of the scintillator bodies **10** when a detector **18** is provided at each end as specifically described by Cusano (column 4, lines 12-31), which enhanced capture would have been recognized as useful in the detector of Possin *et al.*, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the radiation detector fabrication method of Possin *et al.* to optically couple sensor elements **23** at the top end of the scintillator **34** fibers as well as at the bottom end such that the scintillator separated the sensor elements. All arrays **22** suggested in the method for fabricating the radiation detector of Possin *et al.* would be in the "same" radiation detector.

Response to Submission(s)

4. The amendment filed September 1, 2005 has been entered.

5. Applicant's arguments with respect to claims 1, 3, 9, 4-8, 10, 11, 13, 19, 14-18, and 20 have been considered but are moot in view of the new ground(s) of rejection.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Cusano explicitly teaches the advantage of photodetectors at both ends of a scintillator rather than just at one end as shown by Possin *et al.* as specifically pointed out in the rejection.

For at least the reasons explained above, Applicant is not entitled to a favorable determination of patentability in view of the arguments submitted September 1, 2005.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Constantine Hannaher whose telephone number is (571) 272-2437. The examiner can normally be reached on Monday-Friday with flexible hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov/. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Constantine Hannaher
Primary Examiner